QUARTERLY SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Physiology and Histology of Adipose Tissue.*—Toldt has recently published in the transactions of the Vienna Academy (*Lancet*, Jan. 21, 1871) an essay on this subject. In opposition to the statements of Virchow, who maintains that fat-cells are to be regarded as the cells of connective tissue filled with an oily fluid, and are therefore constantly associated with this tissue, Toldt gives as the general results of his inquiries upon the intra-spinal fatty tissue that this, at least, is an organ of a peculiar nature, which neither in regard to its structure nor function can be included amongst the connective tissue formations. In order further to demonstrate that adipose tissue is independent of connective tissue, he refers to the characters and relations of fat in the batrachia. The masses of fat that surround the uro-genital apparatus of these animals in the larval state consist of large, round, transparent, nucleated cells, not separated by *any* intervening substance except bloodvessels. Passing to the mammalia, he points out that the first formation of fat in the embryo occurs around the kidneys, and thence gradually extends into the connective tissue of the mesentery after birth. He considers a strong argument in favour of the independence of the adipose tissue to be the fact that it always has, down to its smallest lobules, its own proper and closed system of bloodvessels, which, it is curious to observe, very closely resembles that of the acinous glands. These researches of Toldt enable us to explain the absence of fat in regions where everything appears to favour its formation, as in the sub-muscular connective tissue of the intestinal canal. It explains also the persistence of the tissue, with its characteristic features, even when all the oily matter has been removed by absorption. Whilst fully concurring in the general statement that fat-cells possess in mature adipose tissue a distinct membrane, he differs from Czajewicz in maintaining that when first formed they are destitute of a membrane, this only becoming visible in the later embryonal periods. The minute masses of protoplasm they contain, however, remain throughout life. He makes an interesting observation to the effect that spring frogs that have fasted through the winter, and are excessively lean, present fat drops in which no membrane is distinguishable, but which, reduced to their protoplasmic primary mass, possess the power of amœboid movements. From the consideration of these facts, M. Toldt has arrived at the conclusion that the protoplasm of the fat-cells, when supplied with sufficient nutriment, is capable, like a gland-cell, of forming fat as a kind of secretion; and, inversely, when the consumption of oxidizable material exceeds the supply, it possesses the power of using up the stored-up fat and discharging it into the blood. The mode in which fat is laid up has also been investigated by Fleischer, with a view of determining whether,

in accordance with Liebig's idea, the amylaceous compounds ingested are converted into fat directly; or whether, as Voit thinks, the fat consumed in the economy is derived from the fat of the food, and that the amylaceous compounds are only serviceable as readily combustible compounds, by means of which the fat developed from albuminous compounds, and already present in the body, are preserved. The results of his investigations on cows, which were both numerous and extended over a long period of time, were on the whole unfavourable to Voit's views.

2. *Amount of Azote in Flesh.*—This question was very fully discussed by Dr. S. SCHENK, before a session of the Vienna Academy held in 1870, as we learn from *Centralblatt f. d. Medicinischen Wissenschaften*, Oct. 1, 1870. The estimate heretofore given of the amount of azote contained in 100 grms. of recent flesh varied from 0.1 to 0.7 grms. The importance of this question in all investigations into the changes the flesh undergoes at different times and under different circumstances, induced Dr. S. to undertake a new series of investigations, in accordance with the plan of Wilb. Warrentrapp (carbonization in connection with nitrate of lime), into the relation, in respect to quantity, which azote bears to equal masses of different forms of flesh in its fresh state. In six analyses of the flesh of horned cattle there occurred a difference of from 0.14 to 0.54 per cent. of azote in the flesh from different portions of the same animal or of different animals. A similar difference was also met with in examinations of the flesh of horses, hares, and dogs, and also of that of the human subject. In the fresh flesh of the latter the largest amount of azote detected was=4.2 per cent. If, now, we agree with Voit in assuming that the medium ratio of the amount of azote introduced into the body by a diet of animal food is 3.4 per cent. by the consumption of even 1000 grms. of flesh, there would be a very large deficiency of the azote contained in the flesh of the human body, to be accounted for from that source. Dr. S. has endeavoured to ascertain the cause of the difference in the amount of azote existing in the flesh of different individuals belonging to the same species of animals. It cannot be explained, he found, by a consideration of unburned residuum in the different experiments, as this varies, in different cases, only from 1.05 to 1.13 per cent. The amount of fatty matter mixed with the flesh must be taken into account in explaining the difference in the amount of azote present, inasmuch as it was found that flesh deprived of fat gave 0.7 to 1.3 per cent. of azote, while that with the fat remaining gave 4.28 to 5.06 per cent. In the analyses made by Dr. S. of the elastic and cellular tissues of the body, he found that the tendo Achillis gave 4.9 to 5.7 per cent. of azote, and the ligamentum nuchæ 6.80 to 6.9 per cent. Hence the greater or less amount of such tissues which the flesh contains, and from which it cannot be freed, must be set down as the main cause of the varying amount (more or less) of the azote it contains. D. F. C.

MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

3. *Further Experiments Demonstrating that Mercury has no Special Action on the Liver.*—In the number of this Journal for July, 1869 (p. 231 *et seq.*), we gave a summary of the report of the Edinburgh Committee on the action of mercury and some other medicines on the biliary secretion. Prof. JOHN HUGHES BENNETT, chairman of that committee, states (*Brit. Med. Journ.*, Jan. 7, 1871) that their experiments were so carefully performed, so frequently repeated, so modified in every conceivable way, and so accurately recorded, that the inquiry seemed to be utterly exhausted. It was imagined, however, by some, and the point is referred to in the report, "that mercurials possess some specific power of exciting the biliary secretion by acting on the orifice of the common bile-